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10/626,658	07/25/2003	Yukihiko Furumoto	826.1884	1396

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EXAMINER	
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2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/626,658	FURUMOTO ET AL.	
	Examiner	Art Unit	
	DANIEL F. HAJNIK	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,6,9 and 11-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,6,9 and 11-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/11/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The amendment filed 6/16/2008 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the computer readable medium on page 2, line 23.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6, 9, 10, 12, and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter a computer-readable medium which was not described in the original specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

For example, the claimed system is disclosed in on pg. 14, lines 5 - 20 and in figure 1. However, neither the original specification nor the figure explicitly show or state that there is a computer readable medium present for the claimed system.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadh et al. (US Patent 6629065, herein referred to as "Gadh") in view of Werner (US Patent Publication 2002/0067464).

As per claim 1, Gadh teaches the claimed:

An animation creating/editing apparatus *(col 16, lines 24-26, "The VDSF allows a user to design (i.e., create, edit, visualize, and manipulate) objects, including extremely complex objects, very rapidly in a three-dimensional VE")*, comprising:

a three-dimensional model *(col 21, lines 42-43, "the geometric model")* storing unit storing an object configuring an image of an animation as three-dimensional model information *(col 16, lines 47-50, "(a) In a Design Intent Graph (D graph), which stores the faceted primitive elements that are combined to assemble a design, and additionally stores the hierarchy in which these elements were combined")*, wherein the three-dimensional model information has a tree structure *(col 22, line 46, "D for the above examples is a tree structure")* configured by a plurality of hierarchies *(col 10, lines 36-39, "(2) the parent-child hierarchy of the elements*

within the design") which represent constraint conditions *(col 10, lines 39-42, "(3) any user-specified or system-specified design constraints on the elements or their relationships (e.g., two elements are to be spaced apart by some specified distance, etc")* of the three-dimensional model, and each of the hierarchies are composed of plural nodes *(col 10, lines 65-67, "Node/element information includes information such as the shapes)* which represent position/direction and shapes information of the three dimensional model *(figure 19, figures 20A, 20B, 21A, and 21B)* ;

an operation instruction editing unit creating/editing an operation instructions sequence *(col 16, lines 24-26, "The VDSF allows a user to design (i.e. create, edit, visualize, and manipulate) objects, including extremely complex objects")* for creating/editing an animation *(col 20, lines 66-67, "modeling and graphical rendering of created models")* wherein the operation instructions sequence comprises object operation instructions *(col 18, lines 41-42, "so that the user is able to pick and place objects in a natural fashion")* and eye point operation instructions *(col 18, lines 21-22, "The Interaction Component provides different methods of navigation in 3D space").*

an interference detecting unit detecting an occurrence of interference between objects based on position/direction and shape information of the three-dimensional model information, which is caused by executing the object operation instruction; *(col 22, lines 52-56, "While the constrained location and alignment commands provide a quick way to position shape elements, the bounding*

box-based intersection checks provide the ability to detect potential collisions between elements")

an interference avoiding unit generating an object operation instruction to avoid the interference, if the occurrence of the interference is detected by said interference detecting unit; *(also in col 22, lines 52-56, where it is inherent that at least one instruction will be generated in response to the detection of an interference, because Gadh teaches of the ability to detect potential collisions)*

an editing rule storing unit *(col 23, lines 3-5, "Another role of D is to store the design rules/constraints specified by the designer while creating the design")* storing editing rules for editing the object operation instructions sequence when an object operation instruction is inserted/deleted/moved in/from/within the operation instruction sequence, when an animation is edited *(col 20, lines 13-17, "Given that exact location and editing of shapes in three dimensions is difficult, the Design Editing Layer provides various types of constraints (design rules) that allow simplification of interactive placement and shape modification");*

an operation instruction editing unit referencing the editing rules, and preventing/avoiding an input operation if the input operation for inserting/deleting/moving an object operation instruction which violates the editing rules in/from/within the operation instruction sequence is input to the operation instruction editing unit *(col 20, lines 34-36, "Another implicit constraint, non-obstruction of predefined negative elements, is illustrated in FIG. 13, where the designer is*

not allowed to move rib r.sub.5 to obstruct hole (negative element) h.sub.4" and col 16, lines 24-26, "The VDSF allows a user to design (i.e., create, edit, visualize, and manipulate) objects" where these operations include input operations and instructions for editing rules).

Gadh does not explicitly teach the remaining claimed limitations.

Werner teaches the claimed:

a discontinuity detecting unit detecting an occurrence of discontinuous scenes, which are too unnaturally discontinuous to reflect a real world and are caused by executing the eye point operation instruction *([0007], "The motion artifact reduction system also has a processor operable to determine whether an object having a first location in a first image frame is sufficiently displaced from a location in a second image frame corresponding to the first location")* or the object operation instruction;

a complementary instruction generating unit generating a move instruction that moves the object or the eye point, to generate a scene which complements between the discontinuous scenes, if the occurrence of the discontinuous scenes caused by a move instruction is detected by said discontinuity detecting unit, and if the occurrence of the discontinuous scenes caused by a first move instruction is detected, the complementary instruction generating unit obtains first and second positions of the object or the eye point immediately before and after a move by the first move instruction *([0007], "to insert the third image frame between the first image frame and the second image frame to form a new series in response to the determination that the object has been sufficiently displaced between image frames")*, obtains a difference between the first and

second positions, and generates a second move instruction to move the object or the eye point to a middle position between first and second positions if the obtained difference is larger than a regulation value *([0028], "interpolating the location of the image for the additional image frame, and inserting the object at its interpolated location into the additional output image frame" and [0032], "between capture of input image frames IF.sub.m and IF.sub.m+1, object O moved from O.sub.m to O.sub.m+1 a distance dx and dy measurable in input image frame IF.sub.m+1" and in [0021], "Furthermore, where there is a great deal of movement between two image frames, a plurality of additional output image frames may be created" where, in this instance, some regulation value or movement threshold has to be present in the reference in order to determine that a great deal of movement has occurred)*, where generation of a move instruction by the complementary instruction generating unit is repeated until the obtained difference is equal to small than the regulation value *([0022], "The method may then repeat steps 140 and 150 as desired" where steps 140 and 150 deal with determining changes in movement and inserting frames through interpolation through that movement).*

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Gadh and Werner. Gadh can be modified by Werner by incorporating the feature of inserting additional frames through interpolation into the interactive object movement capabilities in the system of Gadh as the objects are being displayed on the screen. Werner teaches one advantage of the combination in [0006], "it may be appreciated that a need has arisen to eliminate undesirable temporal aliasing effects caused by objects moving".

As per claim 6, this claim is similar in scope to claim 1, and thus is rejected under the same rationale.

5. Claims 4, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadh in view of Werner in further view of Kondo (US Patent 6812924).

As per claim 4, Gadh teaches the claimed:
the three-dimensional model information holds a constraint condition between objects which is represented such that a node in a lower hierarchy of the three-dimensional model information is constrained by a node in a higher hierarchy; *(col 23, lines 23-29, "While the links in D capture the parent/child hierarchy of shape elements and any design constraints concerning the elements, the nodes contain additional geometric information")*

wherein an unconstrained object is freely moved as far as it does not interfere with another object, and, a constrained object having a predetermined movable range is moved within said movable range as far as it does not interfere with another object *(col 28, line 66 – col 29, line 2, "More often than not, the designer will not want the rib to intersect any other feature on the block ... he/she will generally not want one to 'pierce' the other; preventing the piercing requires moving the object without causing interference")*

Gadh does not explicitly the remaining limitation. Kondo teaches the claimed:

a constraint detecting unit detecting an object operation instruction which violates the constraint condition as an error is further comprised, *(col 11, lines 52-60, "An analytic surface fit error can be detected ... The interference computation data select module 8 specifies the analytic surface 111 containing an error" where the interference is associated with enforcing and checking a constraint condition).*

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Gadh, Werner, and Kondo. Gadh and Werner can be modified by Kondo by adding its error detecting and generating features in col 11, lines 52-58 into the constraint system of provided by Gadh in col 23, lines 4-5 and col 24, lines 42-44. In this combination an error can be generated when a constraint in Gadh has been violated. One advantage of the using the claimed error condition feature is to better communicate design problems to the user.

As per claim 11, Gadh teaches the claimed:

an object operating unit operates an object in a virtual space upon receipt of an input of an object operation instruction from a user, *(col 16, lines 30-32, "(1) An Interaction Mechanisms Layer (or User Interaction Layer), which allows the user/designer to interact with the VDSF via input/output devices")*

the interference detecting unit checks the interference between objects which accompanies the operation; *(col 29, lines 7-11, "Ideally, such intersections should be detected in real-time so that graphical computation of the edited geometry and visual feedback to the designer can be (practically) instantaneously provided")*

when the interference occurs, the interference avoiding unit modifies a move direction of an object to a direction where the interference is resolved, so that the interference is avoided *(col 29, lines 5-7, "Once an intersection is detected in VDSF, the designer may choose to allow or disallow the intersection, and D and S are appropriately updated");*

when an object can be moved without causing interference, the object operation instruction is stored in a corresponding instruction sequence within the operation instruction storing unit via the instruction sequence selecting unit; *(col 28, line 66 – col 29, line 2, "More often than not, the designer will not want the rib to intersect any other feature on the block; the designer may want it to attach to another element ... but he/she will generally not want one to 'pierce' the other; preventing the piercing requires moving the object without causing interference")*

the object operating unit performs a constraint deletion operation for an object by an operation for removing an object from a tree to which the object belongs to, and the object is released from the constraint of a parent object *(col 29, lines 5-7, "Once an intersection is detected in VDSF, the designer may choose to allow or disallow the intersection, and D and S are appropriately updated" where allowing the intersection will delete the constraint between the objects that are interfering or colliding)*

Gadh does not explicitly teach the remaining claim limitation. Kondo teaches the claimed: when the interference cannot be avoided, the object operation instruction becomes an error; *(col 11, lines 52-58, "An analytic surface fit error can be detected ... The interference computation*

data select module 8 specifies the analytic surface 111 containing an error, and selects initial shape data of polyhedron approximation corresponding to this analytic surface 111").

It would have been obvious to one of ordinary skill in the art to combine this teaching of Kondo with Gadh and Werner. The motivation of claim 4 is incorporated herein.

As per claims 9 and 12, these claims are similar in scope to claims 4 and 11, respectively, and thus are rejected under the same rationale.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gadh in view of Werner in further view of Driskill et al. (NPL Doc, "Interactive design, analysis, and illustration of assemblies").

As per claim 13, Gadh does not explicitly teach the claimed limitations.
Driskill teaches the claimed:
13. The animation creating/editing apparatus according to claim 1, wherein: the editing rules includes at least a first editing rule and a second editing rule, the

first editing rule indicates that a target object of the object operation instruction must be in a disassembled state if the object operation instruction to move the target object is inserted in the operation instructions sequence *(in figure 8 where the exploded view diagram is in a disassembled state, also the figure shows that the adjacent parts cannot be moved unless there is*

at least some distance between them, in other words, the parts must be in a disassembled state in order to move; also see the 2nd paragraph in the 1st col on page 31, "Determining a part's translational degrees of freedom is closely related to being able to determine whether or not the part is removable from the assembly by a single translation. It is also sometimes important to check that a given part is constricted in such a way that it cannot be removed"), and

the second editing rule indicates that a first object operation instruction to move/rotate a target object must be moved without changing an order of the first object operation instruction and a second object operation instruction to change a constraint condition to disassemble/assemble the target object, if the first object operation instruction is moved within the operation instructions sequence *(pg. 32, bottom of 1st col, "The next step involves figuring out the minimum distance each component must be exploded from its parent subassembly to completely remove it from that subassembly. This distance only needs to be computed once for each component, since the basic relationships among the assembly components do not change. Bounding boxes are computed for the component and for its parent subassembly minus the component. Then the minimum distance to separate the bounding boxes along the direction of explosion is found. (The explosion direction is indicated by the mating conditions present between the two components.)", in this instance, the relationship between the components maintain an order of the objects, this is further maintained by the mating conditions; also see the top of the 1st col on page 30, "It uses data from the assembly planner to determine the order in which to present subassemblies to the user for the interactive specification of connections.").*

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Gadh, Werner, and Driskill. Driskill teaches one advantage to the combination (1st paragraph under section 5, "Being able to analyze parts for proper fit and removability is an important capability for interactive assembly modeling. The designer receives immediate feedback and can redesign part geometry as necessary without having to put the whole assembly together before finding out that something is wrong"). Gadh is modified by Driskill by generating the exploded diagrams and their assembly constraints in Driskill and applying these techniques to the CAD models used in Gadh in their user interface.

As per claim 14, this claim is similar in scope to claim 13, and thus is rejected under the same rationale.

Response to Arguments

6. Applicant's arguments filed 6/16/2008 have been fully considered but they are not persuasive.

Applicant argues that the 112, 1st rejection and objection to the specification should be withdrawn because a person skill in the art could reasonably rely on the description of the Specification to execute the inventions of claims 6, 9, 10, and 12 (top portion of page 8 in filed response).

The examiner respectfully maintains that the rejections are proper. It is correct that a person skill in the art could reasonably rely on the description of the specification to execute the inventions

of claims 6, 9, 10, and 12, however, the basis of the 112 1st rejection is not enablement pre se, but the written description requirement. The rationale behind the rejection is that the amended feature: "a computer readable medium" is new matter. Thus, the rejection is maintained in this office action.

Applicant argues:

In contrast, the editing rules in amended claims 1 and 6 define the relationship between "an operation instructions sequence" and "an object operation instruction." Further, Werner is only relied upon for allegedly discussing the claimed "discontinuity detecting unit" and "complementary instruction generating unit." A prima facie case of obviousness based upon Gadh and Werner cannot be established, because there is no evidence expressly or implicitly that one skilled in the art would modify Gadh's object design constraints to achieve the claimed "editing rules" that relate to the relationship between "an operation instructions sequence" and "an object operation instruction,"

(pages 8 and 9 in filed response).

The examiner respectfully maintains that the rejections are proper for the following reasons. The system of Gadh does rely on object to object constraints, however, in Gadh, the operations instructions are directly related to the object operation instructions. For example, in Gadh, the system is interactive and thus requires operation instructions in order for the user to have control and interactive manipulation over the objects *(col 16, lines 24-26, "The VDSF allows a user to design (i.e. create, edit, visualize, and manipulate) objects, including extremely complex objects").* In order for the user to manipulate and edit objects in the design system, the system

needs to have operation instructions. For example, the operator or user may move a given object with the mouse. The system in turn uses operator instructions to reference the editing rules in order to see whether the specified user movement of an object follows the constraints in the design system *(col 20, lines 34-36, "Another implicit constraint, non-obstruction of predefined negative elements, is illustrated in FIG. 13, where the designer is not allowed to move rib r.sub.5 to obstruct hole (negative element) h.sub.4").* Furthermore, the system allows more relationships between the operation instruction and an object operation instruction by allowing the user or operator to specify design constraints where a user operation instruction communicates this constraint to an object *(col 10, lines 39-42, "(3) any user-specified or system-specified design constraints on the elements or their relationships (e.g., two elements are to be spaced apart by some specified distance, etc").* The user or operation instruction sequence in Gadh is a plurality of user inputs generated by the system to communicate with the software system in order to correctly perform interaction of the objects for the user or designer *(col 20, lines 13-17, "Given that exact location and editing of shapes in three dimensions is difficult, the Design Editing Layer provides various types of constraints (design rules) that allow simplification of interactive placement and shape modification").*

Applicant's remaining argument has also been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL F. HAJNIK whose telephone number is (571)272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka J. Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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DFH